

PORTABLE VEHICLE EXHAUST FLOW SENSOR

Abstract

A portable exhaust gas flow sensor includes a tube for coupling to an exhaust pipe of a vehicle. The tube includes a circular flow restricting element to induce a pressure drop based on the exhaust gas flow with an upstream port and a downstream port relative to the flow restricting element connected to a differential pressure transducer. A thermocouple extends through a temperature port to measure exhaust gas temperature flowing through the tube. A processor in communication with the thermocouple and the differential pressure transducer determines the exhaust gas flow based on the differential pressure and the temperature. The circular flow restricting element includes sufficient spaces to resist formation of condensation and minimize added back pressure while providing an accurately measurable pressure drop for flows ranging from idle to full throttle.